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- (a) processing a first stream of the water with a deionization apparatus to remove from the water ionized organic carbon compounds and certain organic compounds that are ionizable in said deionization apparatus, wherein at least some of such ionized and/or the certain ionizable organic carbon compounds are susceptible to conversion to non-ionized and/or non-ionizable organic carbon compounds by an agent intended for converting non-ionized and/or non-ionizable organic compounds into ionized and/or ionizable organic compounds, thereby producing a first product stream containing a smaller concentration of ionized and/or ionizable organic carbon compounds including the certain organic compounds, than the first stream;
 - (b) contacting the first product stream with said agent for converting non-ionized and/or non-ionizable organic carbon compounds into ionized and/or ionizable organic carbon compounds at a time and a temperature sufficient to form a second product stream containing a smaller concentration of non-ionized and/or non-ionizable organic carbon compounds than the first stream and a larger concentration of ionized and/or ionizable organic carbon compounds than the first product stream;
 - (c) processing the second product stream with a second deionization apparatus for removing ionized and/or ionizable organic carbon compounds from the water to form a third product stream containing a smaller concentration of ionized and/or ionizable organic carbon compounds and of non-ionized and/or non-ionizable organic carbon compounds than the first stream; and
 - (d) recovering the third product stream from step (c), wherein at least one of said first deionization apparatus and said second deionization apparatus is selected from the group consisting of electrically regenerated ion exchange apparatus, electrodeionization apparatus, electrodialysis apparatus, filled cell electrodialysis apparatus and electrodiaresis apparatus.

2. A method according to claim 1 including a recirculating flow loop and wherein the first removal deionization apparatus comprises the second deionization apparatus.

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3. A method according to claim 1 wherein one of said first deionization apparatus and said second deionization apparatus is selected from the group consisting of electrically regenerated ion exchange apparatus, electrodeionization apparatus, electrodialysis apparatus, filled cell electrodialysis apparatus, filled cell electrodialysis apparatus and electrodiuresis apparatus, and one of said first deionization apparatus and said second deionization apparatus is selected from the group consisting of reverse osmosis apparatus, nanofiltration apparatus, chemically regenerated ion exchange apparatus, activated carbon apparatus and other sorbent apparatus.
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12. An apparatus for purifying water, wherein the water contains both (i) ionizable and/or ionized organic carbon compounds and (ii) non-ionized and/or non-ionizable organic carbon compounds from water comprising:
- (a) a deionization apparatus to remove from the water ionized organic carbon compounds and certain organic compounds that are ionizable in said deionization apparatus, wherein at least some of such ionized and/or the certain ionizable organic carbon compounds are susceptible to conversion to non-ionized and/or non-ionizable organic carbon compounds by a conversion means intended for converting non-ionized and/or non-ionizable organic carbon compounds into ionized and/or ionizable organic carbon compounds, thereby producing a first product stream containing a smaller concentration of ionized and/or ionizable organic carbon compounds including the certain organic compounds, than the first stream;
 - (b) a conversion means for converting non-ionized and/or non-ionizable organic carbon compounds into ionized and/or ionizable organic carbon compounds at a time and a temperature sufficient to form a second product stream containing a smaller concentration of non-ionized and/or non-ionizable organic carbon compounds than the first stream and a larger concentration of ionized and/or ionizable organic carbon compounds than the first product stream;